

# Indications of Deformation Along the $N = 40$ Isotones\*

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The rapid development of collectivity in the  $N = 40$  region as protons are removed from the  $f_{7/2}$  single-particle state is suggested by the dramatic drop in energy of the first excited  $2^+$  state from  $^{68}\text{Ni}$  to  $^{64}\text{Cr}$  [1,2] and the increase in  $B(E2)$  along the Fe isotopic chain. Recent experiment results in the odd-A  $^{67}\text{Co}$  nucleus have suggested the presence of a  $1/2^-$  deformed state attributed to a  $\pi p_{3/2}$  intruder configuration [3-4]. Numerous experiments have focused on the even-even and odd-A Cr and Fe nuclei but little is known about the neighboring odd-odd Mn and Co isotopes. The low-energy level structure of  $^{67}\text{Co}$  motivated a search for deformed and spherical levels in the odd-odd Co and Mn nuclei [5-6] populated through beta decay.

The low-energy level structures of  $^{66,68}\text{Co}$  were studied via the beta decay of  $^{66,68}\text{Fe}$  produced from the fragmentation of a  $^{86}\text{Kr}$  beam at the NSCL and delivered to the Beta Counting System (BCS) for characterization. Isomeric and beta-delayed gamma-ray transitions were observed following the identification of the radioactive ions. Based on the inferred low-energy level structures of the odd-odd  $^{66,68}\text{Co}$  isotopes the spins and parities of the isomeric states were altered from previous literature values.

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